

Morphological and agronomical characterization of *Lotus corniculatus* L. accessions

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A study was conducted at Balcarce region, Buenos Aires province, Argentina, in order to start the evaluation of three accessions of *Lotus corniculatus* L. for morphological and agronomical traits. Two of the accessions were obtained from USDA-ARS; one native from Spain (302921), the other arisen from a cross between the Spanish accession and *L. corniculatus* MO-20. The third was *L. corniculatus* var. **Boyero**. A widely naturalized accession of *L. tenuis* (284) was used as control. The objective was to find adequate growth habit genotypes able to grow under grazing condition.

We evaluated agronomic characters (DM yield) and morphological traits in spaced plant conditions (0.60 m. between rows) with four replications. Each treatment consisted of 18 plants. The trial was hand weeded during the first year. Table 1 shows the dry matter yield in one year period (3 cuts).

Significant differences ($p < 0.001$) in 1,000 seed weight and flowering time were detected among accessions (Spain and MO-20 seed weight was 1.75 gr. and 1.79 gr. and the local cultivar Boyero 1.34 gr., while 284 was 1.11 gr., table 2). Spain flowering was the earliest and MO-20 flowering was the most irregular of all accessions. Spain markedly differed in growth habit from Boyero, the former being prostrate to semiprostrate and the later semi-erect (table 2). Spain produced 16 % of the annual forage yield in the first winter and MO-20 produced 15 %, while Boyero produced 10%. The former could be therefore of interest in forage chains in order to decrease the winter productivity gap typical of the lowland pastures of the Flooding Pampas. Boyero DM yield in summer (2nd. cut) was higher (2,140 kg/ha.) than the other accessions (1,400 kg/ha.), but differences were not significant.

Other results can be summarized as follows: the central leaflet length to width ratio (recorded on the 4th leaf from stem apex) shown differences between accessions, with Spain (2.2 ± 0.3) and Boyero (2.7 ± 0.5), while MO-20 was intermediate (2.5 ± 0.5). The width of matured pod was 3.1 to 3.5 mm in Spain and MO-20, and 2.5 mm in Boyero and 284. Spain and MO-20, shown the most susceptible plants to the attack of *Bruchophagus platypterus* (12 and 17 % of empty seeds) while Boyero and the control shown the least susceptible plants (8 and 3%).

This preliminary evaluation indicates that *Lotus corniculatus* from Spain could be of value for its large seed character, winter active growth, prostrate habit and early flowering. Selections within Spain accession (PI 302921) or MO-20 with bigger seeds could be of value to improve seedling vigour.

Table 1- Dry Matter yield of 3 accessions of *Lotus corniculatus* and *Lotus tenuis* in Buenos Aires province, Balcarce, Argentina.

Accessions	1st cut yield (g/plant)	2nd cut yield (g/plant)	3rd cut yield (g/plant)	Total yield kg/ha
Spain (302921)	10	52	12	1,994
<i>L. tenuis</i> (284)	14	58	10	1,978
var. Boyero	10	89	19	2,572
MO-20 x 302921	11	60	26	2,176
	NS	NS	NS	NS

Table 2 - Morphological characterization of 3 accessions of *Lotus corniculatus* and *Lotus tenuis* in Buenos Aires province, Balcarce, Argentina.

Accessions	Growth habit (1)	Diameter cm	Central leaflet L/W mm	Seed weight x 1,000 gr
Spain (302921)	4.2 ± 0.3 b	50 ± 10 a	2.2 ± 0.3 c	1.75 ± 0.09 (2) a
<i>L. tenuis</i> (284)	4.7 ± 0.1 a	75 ± 15 a	5.0 ± 0.8 a	1.11 ± 0.02 c
var. Boyero	3.0 ± 0.5 c	60 ± 11 a	2.7 ± 0.5 b	1.34 ± 0.04 b
MO-20 x 302921	3.9 ± 0.5 b	51 ± 10 a	2.5 ± 0.5 b	1.79 ± 0.06 a

(1) 1 = erect; 5 = prostrate.

(2) average and SD.

* Means within a column followed by similar letters are not significantly different at the 0.05 level.

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